

A STUDY OF BLOOD LEAD CONCENTRATION IN CHILDREN LIVING IN DOUGLAS AND PIRTLEVILLE, ARIZONA, 1995

EPIDEMIOLOGY AND DISEASE CONTROL

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I. Introduction

Studies in Douglas, Arizona in 1974 and 1985 showed an average childhood blood lead concentration of 20.5 and 13.1 ug/dL, respectively. These average blood lead levels were below the level of concern established at the time by the Centers for Disease Control and Prevention (CDC). In 1991, the CDC reduced the blood lead level of concern from 25 ug/dL to 10 ug/dL based on currently available scientific evidence. Seventy seven percent of the Douglas children tested in the 1985 study exceeded these new limits.

II. Study Design

Children included in this study were 9 to 72 months old. This is the age group that has been shown to be at the highest risk of heavy metal absorption and is comparable to the age groups tested in the 1974 and 1985 studies. Two hundred children were selected for the study and represented 10-15% of the children in the target age group. All families of the children included in the survey had lived in Douglas or Pirtleville during the preceding 12 months. A representative sample of children was selected for the study by going to every fourth residence on each east-west and north-south streets within the city limits of Douglas and Pirtleville.

All participation in the study was on a voluntary basis. At each residence, demographic data were collected on a standardized form after parental permission had been obtained. A venous blood sample was collected from each participating child and transported to the contracting laboratory.

III Laboratory Analysis

The blood was tested for lead concentration at ESA Laboratories, Inc., Chelmsford, MA, by graphite Furnace Atomic Absorption using polarized Zeeman background correction. The detection range was 1-54 ug/dL with the minimum detection limit being 1 ug/dL.

IV Summary of Results

Between October, 15, 1995 and December 12, 1995, survey teams consisting of an interview and a phlebotomist visited 823 homes in Douglas and Pirtleville. Blood samples from 217 children were collected. Data collected from 17 children were excluded from the study; 11 because an inadequate amount of blood was collected, and six because their age was outside the study range of 9-12 months.

SUMMARY OF RESULTS			
Total Number of Study Participants	200		
Blood Lead Classification (ug/dL)	Number (%)		
ClassI (<10)	196 (98.0%)		
ClassIIA (10-14)	2 (1.0%)		
ClassIIB (15-19)	2 (1.0%)		
ClassIII (20-44)	0 (0.0%)		
ClassIV (45-69)	0 (0.0%)		
ClassV (>69)	0 (0.0%)		
Total Above Recommender 10 ug/dL	4 (2.0%)		
Gender	Number (%)		
Male	108 (54.0%)		
Female	92 (46.0%)		
Age	Number (%)		
9-11 months	5 (2.5%)		
12-23 months	27 (13.5%)		
24-35 months	46 (23.0%)		
36-47 months	34 (17.0%)		
48-59 months	40 (20.0%)		
60-72 months	48 (24.09%)		
Race	Hispanic	Non-Hispanic	Unknown
White	121 (60.5%)	6 (3.0%)	2 (1.0%)
African-American	1 (0.5%)	2 (1.0%)	1 (0.5%)
Native-American	8 (4.0%)	0 (0.0%)	0 (0.0%)
Other	33 (16.5%)	0 (0.0%)	2 (1.0%)
Unknown	12 (6.0%)	0 (0.0%)	12 (6.0%)
TOTAL	175(87.5%)	8 (4.0%)	17 (8.5%)

V. Conclusions

Of the 200 children tested in Douglas and Pirtleville, 98% were found to have blood lead

concentrations below the CDC level of concern of 10 ug/dL. Four children, or 2% of those tested, were found to have elevated blood lead levels. A one year old, 2 three year olds, and a five year old had lead concentrations of 13, 14, 16 and 18 ug/dL. respectively.

The average childhood blood lead concentration in this study was 3.4 ug/dL. These data indicate a low prevalence rate of lead poisoning in Douglas and Pirtleville children.

Acknowledgments:

This study was conducted under ADHS contract #08-6016 by Leslie V. Boyer, M.D., Departments of Surgery and Pediatrics, University of Arizona Health Sciences Center, University of Arizona, Tucson, Arizona.

Funding for this study was provided through an agreement between Phelps-Dodge Corporation, Phoenix, Arizona and the Arizona Department of Health Services.

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